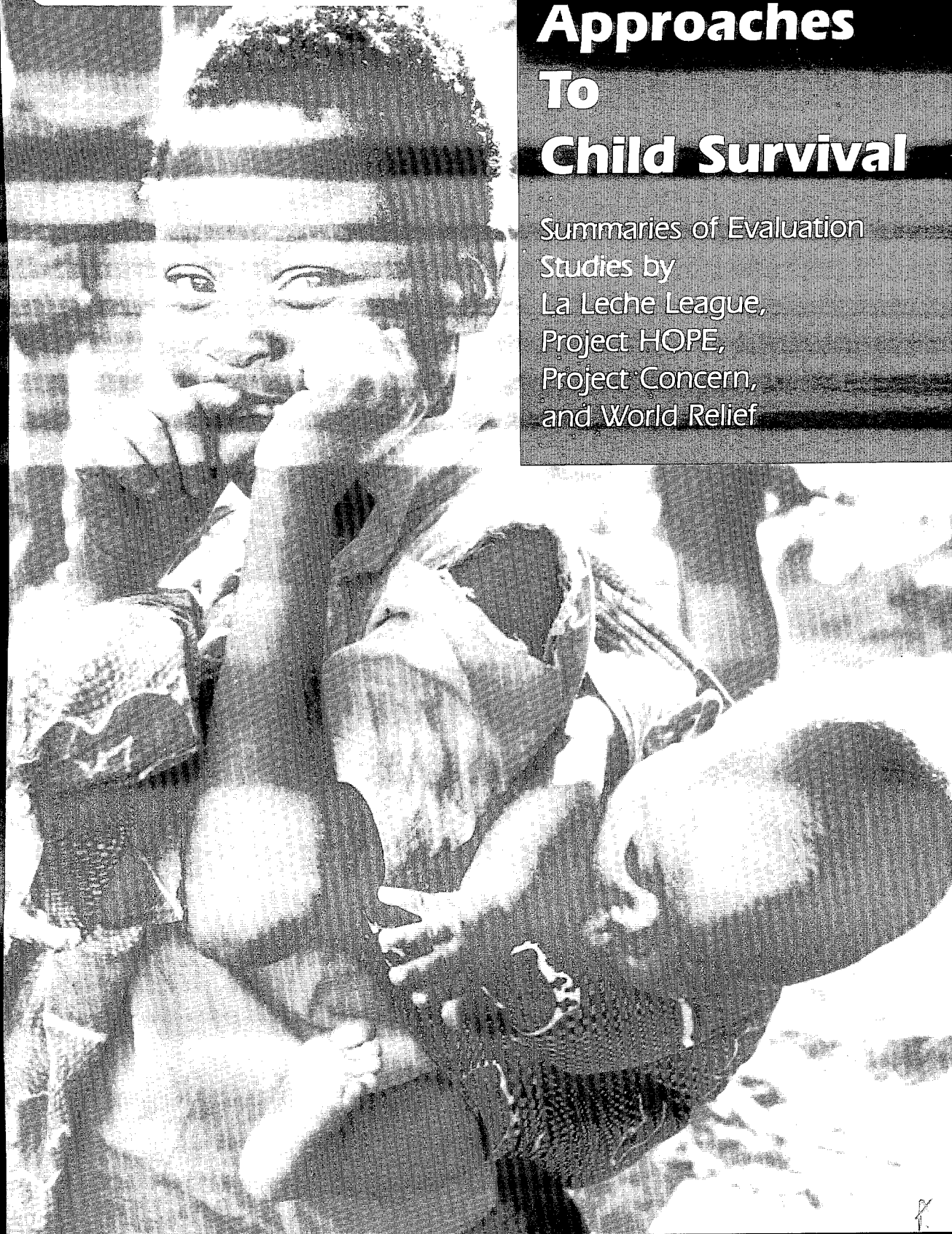


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Innovative Approaches To Child Survival

Summaries of Evaluation
Studies by
La Leche League,
Project HOPE,
Project Concern,
and World Relief





La Leche League International helps mothers worldwide to breastfeed through mother-to-mother support, encouragement, information, and education. It seeks to promote a better understanding of breastfeeding as an important element in the healthy development of the baby and mother.

La Leche League International
1400 N. Meacham Road
Schaumburg, IL 60173-4840 USA
Phone: (847) 519-7730
Fax: (847) 519-0035
E-mail: LLLHQ@pop.wwa.com



Project HOPE alleviates suffering, saves lives, and helps communities attain lasting improvements in health care. By providing health education, health policy research, and humanitarian assistance, Project HOPE is helping people around the world to live longer, healthier lives.

Project HOPE
The People-to-People Health Foundation, Inc.
International Headquarters
Millwood, VA 22646 USA
Phone: (800) 544-HOPE (544-4673)
Fax: (540) 837-1813
E-mail: bschweth@projhope.org



Project Concern International saves the lives of mothers and children worldwide with basic medical care, nutritious food, clean water, and health education through its educational, training, and medical assistance programs. Its emphasis is on the use of volunteers to prepare local communities to care for their own with long-term, self-sustaining projects.

Project Concern International
3550 Afton Road
San Diego, CA 92123 USA
Phone: (619) 279-9690
Fax: (619) 694-0294
E-mail: postmaster@projcon.cts.com



World Relief Corporation, as the International Assistance Arm of The National Association of Evangelicals, USA, primarily works through local churches to alleviate human suffering. Its emphasis is on using local initiative and resources to promote economic and social development and health improvement.

World Relief Corporation
International Division, PO Box WRC
Wheaton, IL 60189 USA
Phone: (630) 665-0235
Fax: (630) 665-4473
E-mail: worldrelief@xc.co

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Acronyms

ARI	acute respiratory infection
BASICS	Basic Support for Institutionalizing Child Survival
BC	breastfeeding counselor
BCG	Bacillus of Calmette and Guerin (tuberculosis vaccine)
DPT	diphtheria, pertussis, tetanus vaccine
FIC	fully immunized child
GMP	growth monitoring and promotion
HAS	Hôpital Albert Schweitzer
HIV/AIDS	human immunodeficiency virus/acquired immunodeficiency syndrome
HSA	health surveillance assistant
ITI	immunizer-training-immunizer
KPC	knowledge, practices, and coverage
LLG	La Leche League Guatemala
LLI	La Leche League International
NGO	nongovernmental organization
ORS	oral rehydration solution (salts)
PCI	Project Concern International
PVO	private voluntary organization
STD	sexually transmitted disease
USAID	United States Agency for International Development

Introduction

Private voluntary organizations (PVOs) have played a key role in the international child survival movement since its inception, working with dedication and creativity in remote and impoverished communities to bring about real changes for the better. Many innovative solutions have emerged from their committed efforts, especially through the child survival grants provided by the U.S. Agency for International Development (USAID). In keeping with its child survival mission, the Basic Support for Institutionalizing Child Survival (BASICS) Project undertook a program to help PVOs identify, evaluate, and document some of the most innovative solutions to the challenges they face in their child survival programs.

The range and potential importance of community-based child survival programs were highlighted at a seminal conference on the role of PVOs held in Bangalore, India, in 1994.¹ In consultation with USAID and The Johns Hopkins University Child Survival Support Program, BASICS selected 4 of the 29 award-winning projects presented at the Bangalore conference and provided them with funding to carry out further analysis and documentation of their programs. Support was provided to La Leche League International, People-to-People Health Foundation, Inc. (Project HOPE), Project Concern International, and World Relief Corporation in 1995 and 1996 for the studies. Summaries of the results are presented in this report.

The studies are exciting to read because they are truly innovative, solving tough problems in new ways. In Malawi, collaboration with large tea estates is providing primary health care to agricultural workers and their families. In Indonesia, successful immunizers are training their less experienced peers to increase coverage and improve quality. In the peri-urban areas of Guatemala City, volunteer breastfeeding counselors are functioning without supervision to support mothers in the nurturing of their young children, while in Haiti, a network of volunteer mothers is helping to link rural households to a district hospital through a community nutrition program.

Many of the findings are unexpected. Project HOPE expected to find that increased worker productivity or reduced medical costs were the reasons agricultural estates in Malawi became involved initially and then continued to fund a maternal and child health program for the workers and their families after a USAID grant expired. Instead, interviews with the estate managers revealed that the reasons were quite different. These decisions were made because the estate managers believed that the marginal out-of-pocket cost was very low and felt that such a program was the right thing to do for their employees. Also, they trusted Project HOPE to manage the activity in a way that would not be controversial and would not place undue burden on the time and attention of the estate managers.

La Leche League trained over 200 volunteer mothers from the poor barrios of Guatemala City to be breastfeeding counselors and then helped these counselors to support local mothers to nurture their children under a USAID child survival grant. The League believed that over half the breastfeeding counselors had dropped out of the program in the three years following the ending of the grant, but to their amazement discovered that nearly all were still actively counseling mothers and referring them to clinics when needed. All told, the counselors were in touch with about 25 percent of all the women of child-bearing age in the project communities. The evaluators were equally surprised to learn that the intensity and quality of the program had continued unabated for three years with no supervision. Instead, a system of mutual support among community mothers, the volunteer counselors, and La Leche League kept the program participants motivated and informed at low cost.

Project Concern International knew that its immunization program with the Maluku Province Ministry of Health in the eastern islands of Indonesia was working smoothly, had uncovered important shortcomings in the health system, and had pilot-tested solutions that included a program to improve the performance of immunizers. But neither Project Concern nor the Ministry of Health had any idea how remarkably successful their peer training program had been, until a study estimated

that immunization coverage increased by 40 percent in the program health centers at very low cost—only about 50 cents per additional fully immunized child.

The Hearth nutrition model improves earlier approaches that were effective in reducing malnutrition in small populations but too costly to scale up to large ones. A study of the Hearth program at Hôpital Albert Schweitzer in Haiti through World Relief Corporation produced several surprising and important findings. To scale up to the district level, the program first had to cut costs by scaling down. This was accomplished by moving the program closer to the communities it served and using community resources and know-how. In the process of doing that, the program succeeded in building an effective network of community health volunteers linking the hospital to the households throughout the district. Although designed to rehabilitate severely undernourished children, the program proved more effective at preventing the deterioration of mild and moderately malnourished children, to everyone's surprise. In another unexpected finding, the use of information from "positive-deviant" mothers (i.e., poor mothers with well-nourished children) about what they fed their healthy children was more valuable as a way of convincing other mothers that they too could afford to feed their children a nourishing meal than as a technique for discovering affordable and nourishing menus.

The approaches documented in these studies deserve to be applied and tested more widely. The application of the Hearth model is already proliferating. Save the Children Foundation has reported amazing success with the approach in Vietnam, and World Relief Corporation is implementing it in Bangladesh with promising early results. To assist others who may be interested in the application of these approaches, in-depth technical reports of the La Leche League, Project HOPE, and Project Concern studies and the Haiti, Vietnam, and Bangladesh applications of the Hearth model are available from BASICS and the respective PVOs.



La Leche League

La Leche League has implemented sustainable and often successful programs in many developed and under-developed countries. While La Leche League generally relies on educated, middle-class mothers for membership and leadership, leagues in some countries have developed programs that reach into the lower socioeconomic segments of the population to involve mothers in promoting and supporting breastfeeding and other child health practices in their own communities. The question is whether these programs have worked. Are they reaching a substantial proportion of the needy low-income mothers? Are they sustainable? Do they make a difference?

Program Description

In 1988, La Leche League International (LLLI) and La Leche League Guatemala (LLLG) initiated a project to establish a community network of mother-to-mother support in poor peri-urban areas of Guatemala City with funding from a USAID child survival grant. During the four years of the grant project, 214 breastfeeding counselors (BCs) from the peri-urban areas were trained and supervised at a cost of \$190,000. The BCs provided one-on-one counseling to other women in the area, referred them and their children to nearby health clinics, and ran mother support groups, all on a volunteer

basis with no financial reward of any sort. LLLG staff received monthly reports from the BCs, made visits to the low-income communities, held monthly meetings and mini-workshops with the BCs, and carried out a myriad of required administrative tasks, all in addition to the initial BC training and establishment of programs in the communities.

In 1992, as the end of the grant funding approached, a meeting of BCs and LLLG staff discussed the future of the program. Seven of the 10 program communities were well represented at the meeting and decided to continue

Community
Volunteers Join
Hands to Sustain
a Mother Support
Project in the
Peri-Urban Areas
of Guatemala City

the program. The BCs from each of those seven communities selected a "coordinator" and "subcoordinator" from their own ranks to act as their leaders and represent them to the program. For its part, LLLG agreed to continue to provide support to the program with monthly meetings and mini-workshops for the coordinators, maintain the information system, and provide overall coordination, but with a greatly reduced staff. These commitments were implemented and for the most part have been maintained to the present. One of the seven communities dropped its coordinator, no new BCs were trained, and no new community programs were established.

Methods

In 1996 LLLG undertook a study of the sustainability of the Guatemala peri-urban project with funding from BASICS. The study focused on three questions: In what sense has the program been sustained? What factors have contributed to the program's sustainability? Can LLLI establish norms that systematically promote sustainability of its programs? The study is summarized here and

reported in detail elsewhere.²

The sustainability study obtained three types of data: (1) a household survey of a sample of women living in one community (El Limón) within the program area, (2) a structured interview with as many of the original BCs as could be located, and (3) administrative and financial data from LLLG records. The household survey data were used to ascertain the coverage of the program—what proportion of the women in El Limón were in contact with BCs and received services from them? The BC interview data were used to ascertain the patterns of activity and productivity among the BCs and to identify factors that might enhance program sustainability and productivity. The administrative and financial data were used to describe the nature and magnitude of the support and supervisory system provided by LLLG to the BCs and the communities during the postgrant period.

El Limón, a community of about 12,000, was selected as the site of the household survey because it is fairly typical and has one of the highest concentrations of BCs of

all the project communities. A census of households in 50 of the 83 "blocks" in El Limón yielded information from 501 women between the ages of 15 and 49 years, 217 of whom were pregnant or had a child under 2 years of age (the priority group for the BCs) and 284 others who had older children or none. Structured interviews were obtained with 102 of the 141 BCs who were trained and participated in the LLLG program³; of the remaining 39, 38 had moved away and one had died.

Findings

Structure, Supervision, and Support

The structure of the program can be characterized by six levels:

- (1) women in the community who are not in contact with BCs,
- (2) women in the community who are in contact with the BCs,
- (3) the BCs, (4) the coordinators and subcoordinators, (5) LLLG and the paid program staff, and
- (6) LLLI and its associated country leagues. The study shows that support flows in both directions across these levels and that each of these levels provides support to the adjacent levels on

both sides and in some cases two levels away. For example, the BCs are motivated and sustained by the women they serve, by the coordinators they have selected, and by the LLLG organization, meanwhile providing valuable services to many women in the community and motivating the continued commitment of the coordinators and LLLG. The BCs report that they receive valuable support from the coordinators and LLLG; 83 percent of those interviewed reported feeling support from LLLG. Another example: 65 percent of the women in contact with a BC have taken it upon themselves to counsel other women in the community about breastfeeding and health (the so-called "ripple effect"), thus establishing the support link between the first two levels of the structure.

In 1992, just before the grant funding ended, the program was operating in 10 communities with no coordinators, with approximately 141 BCs (although not all 141 were operating mother support groups), 7 paid LLLG staff members devoting 50 percent of their time to the project, and an annual budget of

"The breastfeeding counselors are powerhouse women!"

Observation by
an evaluator

about \$50,000. The LLLG staff provided all supervision of the BCs with field visits, monthly meetings, mini-workshops, and a reporting and information system. Following the transition period in 1992-93, the program has continued to operate in seven communities with six to seven coordinators and from three to five subcoordinators, an LLLG staff of only three individuals at 40 percent time, and an annual budget of about \$20,000. Most of the 141 BCs continued to function (but not evenly) in all 10 original communities, as discussed in more detail later. The LLLG staff continued to operate the reporting and information system with data collected by the coordinators and run monthly mini-workshops for coordinators and subcoordinators (but not for BCs).

Although field visits by LLLG staff were sharply curtailed as coordinators took more responsibility for supporting the BCs, LLLG continued to hold monthly on-site meetings with BCs in the communities and run an annual workshop for all the BCs.

Services Provided

Following the termination of the grant, some of the BCs continued to submit monthly reports through their coordinators while others did not. LLLG assumed that the nonreporting BCs were no longer active. One of the big surprises from the structured interviews with BCs is that this assumption is wrong. The nonreporting BCs are still actively promoting breastfeeding and child health through individual counseling and referrals, although

Table 1-1. Services Provided by BCs

Type of Service (Prior 3 Months)	Reporting BCs (N=45)		Nonreporting BCs (N=57)		All BCs (N=102)	
	% of BCs Providing	Avg. Times per Month ¹	% of BCs Providing	Avg. Times per Month ¹	% of BCs Providing	Avg. Times per Month ¹
1. Counseling	42/45=93	30.0	44/57=77	18.0	84	23.9
2. Home visit	38/45=84	9.7	21/57=37	12.3	58	10.6
3. Clinic referral	34/45=76	8.7	35/57=65	4.3	71	6.5
4. Support group (prior 12 mos.)	34/45=76	Unknown	7/57=12	Unknown	40	Unknown
5. Average hours/week/BC	5.3 (N=35)		3.0 (N=45)		4.2 (N=80)	

¹Average number of times the service was provided per month by each BC who *provided* service in last three months.

most are not running mother-to-mother support groups. The nonreporting BCs are spending about half as much time on breastfeeding promotion activities as the reporting BCs. Table 1-1 shows the proportion of reporting and nonreporting BCs who provided various types of services in the three months, or, in the case of support groups, in the 12 months preceding the interviews. The BCs spend a little more than one-half day per week on their BC activities on average, although the variance among BCs is very high and the figures for average number of times per week in Table 1-1 exclude four reporting BCs who said they spend over 100 hours per month.

The BCs are mature women with families; their average age is 43 years, and they have an average of 4.1 children. Most (88%) are literate and 61 percent have completed primary school. They are active: 51 percent are engaged in part-time paid work and 69 percent are involved in other volunteer activities. As one observer noted, "The BCs are powerhouse women." The reporting and nonreporting BCs are similar

in many ways (same age, family size, proportion working), but differ in two important characteristics: the nonreporting BCs are less involved in other voluntary activities than the reporting BCs (56% vs. 84%) but are more literate (91% vs. 84%) and more have completed primary school (69% vs. 48%).

What motivates BCs to continue their mother-to-mother support work with LLLG? In the structured interviews, 63 percent said they liked teaching and giving advice, by far the most frequent response. In general, they were motivated by the process of interacting with women and being generally useful in the community rather than by the idea of achieving particular results such as reducing the use of baby bottles. Many of the nonreporting BCs said they gave up running support groups because they needed the time for other activities, such as other (paid) work (44%), caring for their own children (9%), or illness (9%). Only 7 percent said the reason they did not continue to report and operate support groups was because they lost contact with their BC colleagues or LLLG. However, a much higher proportion

Table 1-2. BCs Who Felt Support from LLLG and the Coordinators

BCs Who Felt Support from:	Reporting BCs	Nonreporting BCs	All BCs
LLLG	98%	58%	83%
Coordinators	74%	42%	61%

of the reporting BCs felt support from LLLG and coordinators than nonreporting BCs, as shown in Table 1-2. From this data, it seems that BCs stop reporting for personal reasons such as the need to work, and then lose their sense of support from LLLG and coordinators.

Further, an analysis by community indicates that the presence of a coordinator was an important factor in maintaining the activity level of BCs. When communities with coordinators are compared with communities without coordinators, the former are much more likely to have BCs who continue reporting (60% vs. 3%), run support groups (53% vs. 7%), and feel supported by LLLG (83% vs. 11%). On the other hand, BCs in communities that are left without a coordinator stop having support groups and stop reporting to LLLG, and the resulting loss of contact diminishes their sense of support.

Services Received

The household survey found that the BCs were in contact with about 25 percent of all women of child-bearing age in the household sample. There was no apparent socioeconomic difference between women in contact and not in contact with a BC, and very little difference in coverage between the priority group (pregnant women and mothers with children under 2 years of age) and all women of child-bearing age. Table 1-3 presents the proportion of women in the El Limón survey receiving different types of services from a BC in the three months just prior to the survey. Most of the clinic referrals in rows two and three of the table were for prenatal or well-baby care, or infectious diseases. The survey discovered that 90 percent of the women who were referred for health care followed the advice of the BC and actually went to a clinic, demonstrating the credibility of BCs in the community.

Cost-Effectiveness

Systematic data that link services received to particular BCs were not obtained; therefore, reliable estimates of population-based productivity are not possible. However, estimates of service ratios can be made for the El Limón study area by assuming that all the services received in that area were provided by the BCs who reside there. The El Limón study area has a population of about 7,200, including 675 women aged 15–49 years and 15 resident BCs, yielding one resident BC for every 45 women of child-bearing age or, alternatively, one BC per

population of 480. This preliminary result does not imply a linear relationship between the number of BCs and the population covered, nor that the same coverage ratio can be achieved in other types of communities. Nevertheless, it does provide one data point about this important relationship.

However, if linearity is assumed by extending the El Limón coverage per BC to the other BCs in the Guatemala program, then the program reaches 1,075–1,493 women of child-bearing age, depending on whether there are

Table 1-3. Coverage: Services Received by Women in Last Three Months in El Limón

Type of Service	Pregnant or with Child <2 Years (N=216)		Other Women 15–49 Years (N=283)		All Women 15–49 Years (N=499)	
	Fraction Covered	As % of Contacted	Fraction Covered	As % of Contacted	Fraction Covered	As % of Contacted
1. In contact with a BC	56/216=26%	100%	69/283=24%	100%	125/499=25%	100%
2. Child referred to clinic	40/216=19%	40/56=71%	41/283=14%	41/69=59%	81/499=16%	81/125=65%
3. Woman referred to clinic	33/216=15%	33/56=59%	34/283=12%	34/69=49%	66/499=13%	66/125=53%
4. Visited at home by BC	31/216=14%	31/56=55%	36/283=13%	36/69=52%	67/499=13%	67/125=54%
5. Attended support group	17/216=8%	17/56=30%	39/283=14%	39/69=57%	55/499=11%	55/125=44%
6. Average no. of times attended support group in last 12 months	3.5		7.0		6.0	

Note: The women referred to clinics in row three were either pregnant themselves or mothers of pregnant daughters.

102 BCs (the number interviewed) or 141 BCs (the number trained for the LLLG project) in the program. This yields an estimated annual cost of \$13.40–\$18.60 per woman covered, assuming the entire LLLG budget of \$20,000 is devoted to the peri-urban program. However, this overestimates the actual cost per woman covered because part of the LLLG budget is used for other activities and because it does not include mothers counseled by other non-BC mothers (the “ripple effect”). Furthermore, the LLLG staff agreed that the current budget is sufficient to maintain a substantially larger number of BCs in the current seven communities, but adding more communities would require additional resources to maintain the same level of support from LLLG. In other words, the cost per woman covered could be reduced substantially by increasing the concentration of BCs in the current program communities. This observation by the staff is further insight into the nonlinear nature of the productivity function relating resources to results.

Conclusion

Following the end of the grant in early 1993, the LLLG peri-urban program has been sustained at nearly the same level of service as before for over three years with an internally generated annual budget of about \$20,000. In the most successful communities, the program is reaching about 25 percent of the women aged 15–49 years. Although the number of BCs reporting to LLLG and the number of their mother-to-mother support groups has decreased since 1993, the nonreporting BCs are still actively involved in individual counseling of women, and as a result the proportion of women receiving counseling and referrals to clinics has generally been sustained at previous levels. The community women participating in the program have also maintained a high level of contact with other women in the community about breastfeeding.

Previous studies in other countries⁴ have shown that similar mother-to-mother support programs yield

significant increases in the prevalence and duration of breastfeeding, including exclusive breastfeeding during the first six months of life, which in turn reduces morbidity, mortality, and fertility.

Two factors appear to be key to this success: (1) high personal motivation of the various participants (the mothers, the BCs, and the LLLG volunteers and staff) and (2) the six-level support structure (participating and nonparticipating women, BCs, coordinators, LLLG, LLLI) that provides bidirectional support and motivation across the levels. The

program's decision to recruit respected and motivated women as BCs, allow them to select their own coordinators, and continue to offer monthly and annual workshops for coordinators and BCs appears to be vital to the success of the program. Other key observations of the study are that (1) the prominent perceived need by community women is physical and economic survival rather than health, and (2) good coordination with local health facilities and authorities is very valuable to the success and sustainability of the project and needs additional development.



Project HOPE

There are significant opportunities in developing countries to enhance the contribution of the private sector to child survival, both as suppliers of goods and services and as employers. Although surprisingly few, reports of child survival programs in developing countries that focus on the workplace and the private sector as employer show positive results.⁵ In 1990–91, 39 agricultural tea estates in southern Malawi decided to extend preventive health care to the families of estate workers under a USAID child survival grant to Project HOPE, coverage not previously included in the clinic services provided by the estate companies. Project HOPE trained and supervised an employer-paid primary health care worker in each estate. The results were successful. Not only did many health practices improve, but at the conclusion of the grant all of the participating estates agreed to continue the program with their own funds. The word spread and 19 estates in the neighboring district requested to join the program.

In 1996, Project HOPE undertook a study to measure the extent of the improvements in health practices and conditions, and to ascertain the reasons for the estates' decision to join the program in the first place and then to continue it with their own money.⁶ The primary reason given by estate managers for joining the program initially was that it would be good for the workers and their families but would not cost much money, nor, because of Project HOPE's proven professional experience in the health field, would it place additional burdens on the estate managers or put the estates at risk. The potential for monetary or nonmonetary returns to the estates, although possible, did not seem to be a factor in their decision, because such benefits were viewed as unlikely. The project was continued after the grant ended because in their opinion these views were confirmed.

Project HOPE
Collaborates
with the Private
Agricultural Sector to
Provide Child Survival
and Maternal Care
Services in a Successful
Strategy for
Attaining Long-Term
Sustainability of
Health Promotion
in Malawi

Background

Agricultural estates raising tea, coffee, and other crops have existed in southern Malawi since the colonial era. These estates vary in size, management structure, and in the degree to which they are administered centrally by the parent company or as quasi-independent units. The larger estates are owned by foreign individuals or multinational corporations. Ten companies own nearly all of the approximately 60 estates in the southern Malawi districts of Thyolo and Mulanje, where the Project HOPE program is located.

Senior managers are often expatriates, although they are gradually being replaced by Malawian managers. Most are long-term residents of the area who are well known to each other and have many years or even decades of experience in agricultural estate work. Managers of individual estates are now mostly experienced Malawians.

The Thyolo and Mulanje estates employ approximately 55,000 permanent and temporary workers during the peak season (November–April) and about half

that number in the off-season. The workers and their immediate families total about 275,000 persons and account for 30 percent of the population of Thyolo and 10 percent of Mulanje. The estates provide housing to about half of the permanent workers and their families, who live in housing compounds on the grounds of the estates, while the other workers live in nearby villages. A 1995 census showed 55,000 persons were living in over 300 estate compounds. However, estate residence is not usually permanent, with only 35 percent of families occupying their compound house for more than five years compared with 92 percent in the villages.

For many years the estates have provided free medical services to all employees and their families, whether they live on the estates or in nearby villages. The extent of services and level of training of providers differ from estate to estate, ranging from some estates having dressers who treat minor injuries and basic illnesses to a few estates that have clinical officers who also provide limited inpatient care. Estates' medical

budgets range from 1 percent to 5 percent of total wages, with one-third or more of the costs going for medications, one-third for personnel, and one-third or less for the ambulance. Workers who live in the villages can also obtain care from either free government or fee-for-service church clinics. In the villages, paid government health surveillance assistants (HSAs) promote health education, family planning, clean water usage, and sanitation and provide some prenatal and postnatal clinics and other community health services. However, before Project HOPE initiated its program, only a few estates provided any preventive or maternal care and none had HSAs working on the estate. Consequently, the families of workers living on estate compounds were receiving substantially less preventive care than those living off the estates.

Program Description

A 1990 agreement between Project HOPE and one of the estate companies in the Thyolo district led to the program under discussion. Under the agreement, Project HOPE trained and supervised HSAs hired by one

estate company to work on the company's eight estates, and also recruited and trained compound health volunteers. Project HOPE used the government HSA training curriculum and provided the HSAs with bicycles for transportation. The HSAs focused on families living in the estate compounds rather than village residents, since the government had plans to train HSAs to operate in many of the villages. The primary activities of the estate HSAs included:

- giving group health talks to women and children in the compounds;
- inspecting all houses, water sources, latrines, and other sanitary facilities in the compound and reporting problems to the estate managers;
- reporting disease outbreaks;
- organizing compound clean-up campaigns;
- referring sick children and adults to clinics; and
- assisting with preventive care work at the estate clinics (e.g., immunization, growth monitoring).

The group health talks focused primarily on child survival, including childhood and tetanus immunizations;

control of diarrhea, malaria, and respiratory infections; improved breastfeeding and complementary feeding; prevention of HIV/AIDS; and promotion of family planning. The inclusion of HIV/AIDS and family planning in the talks reflected the interest of the estates and the growing commitment of the government. The focus on the condition of compound housing, water, and sanitation was influenced by the government HSA training curriculum, which reflects the historical roots of government HSAs as sanitation workers, and the interest of estate managers in maintaining the condition of housing on their estates.

The successful initiation of this plan led a year later to its expansion to 39 estates operated by 11 different companies in Thyolo district, with funding from a USAID child survival grant. At the onset, all 11 estate companies agreed as a condition of participation to hire an HSA for each estate, to contribute toward recurrent program costs, to provide access to their facility-based curative providers for training, and, if the HSAs had done a good job, to continue employing them after the external funding ended.

At the completion of the USAID grant three years later, all 11 estate companies agreed to continue the program, and Project HOPE agreed to continue to provide supervision for the time being until a more lasting arrangement could be found. Meanwhile, estates in the neighboring district of Mulanje requested that Project HOPE implement a similar program for them. This was accomplished with a second USAID child survival grant, expanding the program to 19 additional estates in that district. However, this time Project HOPE took a back seat, providing backup to the estate health officers who did most of the training and supervision of HSAs. In both districts, transport to and from meetings and trainings, formerly paid by Project HOPE, was funded by the estates. Later in this second grant, Project HOPE and the estates formulated a plan in which a local nongovernmental organization (NGO) funded by the estates themselves would take over the role that Project HOPE had been fulfilling as evaluator and organizer of the training and supervisory functions. The NGO has since been established.

Questions

Project HOPE's experience with child survival in the Malawian tea estates raised two types of questions. First, did the program actually improve health and child survival in the families of tea estate workers? Did the knowledge, practice, coverage, or status of health improve? Second, why did the tea estates decide to initiate this program and then continue it when external funding stopped? For example, did the estate managers think the program would reduce medical care costs or increase worker satisfaction or productivity? And then, from their experience of the program, did the managers believe that these objectives had actually been accomplished?

Methods

Project HOPE completed five household surveys of knowledge, practice, and coverage (KPC) between 1990 and 1996: in Thyolo in 1990, 1994, and 1996 and in Mulanje in 1994 and 1996. Each survey interviewed about 300 mothers with a child under 2 years of age selected randomly from all

worker families living on the estates, using a 30-cluster sampling approach. The 1996 Mulanje survey included estate workers living on and off the estates. These surveys measured improvements in key indicators of knowledge, practice, and coverage. The surveys were supplemented by data from estate administrative records.

To determine the reasons why the estates initiated and then continued the program, Project HOPE undertook in-depth semistructured interviews with estate managers in May and June 1996 with funds from BASICS. Interviews were completed with 37 estate managers (10 senior managers, 16 mid-level managers, and 11 medical officers and other health staff) from the eight largest estate companies that account for 90 percent of all estates in the two districts. Current and former program staff were also interviewed. The interviews with the estate medical officers and health staff also provided insight into the extent to which the program contributed to observed improvements.

"You could depend on them [Project HOPE] to do what they said they would and so we didn't have to worry."

Comment about Project HOPE by an estate manager during evaluation interview

Findings

Program Impact

Results of the KPC surveys and estate records are summarized in Table 2-1. In general, results were mixed. Improvements were observed in availability of specialized clinics, in the quality of housing and sanitation, in coverage for vitamin A capsules but not for immunizations, in appropriate feeding and family planning practices but not in practices related to specific diseases, and in some indicators of knowledge. Estate medical personnel said that

the program made important contributions to many of these improvements.

Program Sustainability

Potential benefits from the program were of three types: improvements in the health and well-being of the workers and their families; monetary benefits to the estates (e.g., reduced health care costs, higher productivity, lower absenteeism, reduced funeral costs); and nonmonetary benefits to the estates (e.g.,

Table 2-1. Selected Indicators of Tea Estates Program Impact

Indicator	1990	1994	1996	Comment
Availability of health services				
Number of specialty clinics	Under 20	—	55	Substantial increase, probably due to program
Living conditions				
Satisfactory housing	68%	—	90%	Increase probably due to program
Satisfactory sanitation	75%	—	86%	Increase probably due to program
Coverage of health services				
Measles immunization	—	84%	79%	Decrease, due to nationwide vaccine shortage
Vitamin A capsules	—	16%	27%	Increase, program effect uncertain
Knowledge and practices				
Breastfeeding/feeding	Consistent improvement			Increase probably due partly to program
Diarrhea/ARI/malaria	Mixed results			Program effect uncertain
HIV/AIDS prevention	Mixed results			Program effect uncertain
Family planning, use modern methods				
Thyolo	4%	18%	15%	Substantial increase, probably due partly to program
Mulanje	—	11%	21%	Substantial increase, probably due partly to program

Notes: Data about specialty clinics and living conditions obtained from estate administrative records, and about coverage, knowledge, and practices from household KPC surveys. Coverage refers to children aged 12–23 months at time of KPC survey, while knowledge and practices refers to mothers with children under 2 years old. Dash (—) = Data not available or not comparable.

generation of goodwill with workers and government). Senior managers discussed all these issues before initiating the project—the prospect of improved well-being of the workers and their families being the primary reason for the commitment. Senior management was keenly aware that its first priority was the profitability of its business, but, if worker welfare could be improved within stringent limits set by management, then the senior managers viewed the program as the right thing to do. Those limits were the following:

Low monetary cost to the estate. The managers thought that the program would not create significant new costs for the estates. The extra cost of paying one HSA per estate (about 1,000 workers per estate during the peak season) was not viewed as significant, increasing total labor costs by only a few tenths of a percent.

Small claim on managers' time. Estate management did not want to use their time to manage the new program. They already had their hands full trying to keep the estates profitable after droughts in four of the last six years.

Experienced health management. To be successful, estate managers believed that the program required supervision by management experienced in health programs, such as Project HOPE. The estate managers did not feel they had such competence.

No unforeseen problems. They wanted the program to be uncontroversial. Avoiding risks such as conflicts with workers or government was and remains essential.

Project HOPE was the key to meeting the last three conditions because the estate management viewed it as a professional organization that knew about health management and was sensitive to the concerns of the estates. Project HOPE was commended for its “high level of professionalism. You could depend on them to do what they said they would and so didn’t have to worry about things.”

The prospect of monetary or nonmonetary benefits did not appear to influence the estates’ decision. Although all the managers interviewed thought such benefits

would be desirable, at the time they made the decision to join the program, none of them thought that the program was likely to yield such benefits.

Senior management said that their experience with the program confirmed their original views and, therefore, they decided to continue the program with estate funds when the grant ended. The cost to the estates was low; the demand on their own time was small, but they had been kept informed; no problems had been stirred up; and Project HOPE had done its job in a professional manner. The managers felt that the program had benefitted the workers and their families, a conclusion based on their own personal observations of compound cleanliness, on

reports of fewer disease outbreaks by their medical staff, and on the general impressions communicated to them by their subordinates.

None cited results from any of the household surveys, although all of them had received this information.

Studies of other employer-based health and family planning programs report that the motivations of employers differ (e.g., monetary return-on-investment is more important in family planning programs), but all conclude that such programs have been successful in improving health-related coverage, practice, and knowledge as well as being sustainable.^{5,7} In light of this consistent success, it is surprising that employer-based programs have not received broader support in the child survival community.





Project Concern

Project Concern International (PCI) has provided technical assistance in child survival and primary health care to the Health Ministry in Maluku Province in the eastern islands of Indonesia under a USAID child survival grant since 1992. Unlike many USAID child survival projects that provide direct health care services to communities, PCI worked in close collaboration with the provincial and district departments of health to identify problems and test solutions, which the district and provincial health delivery systems then adopted. Initially the PCI Maluku program focused on child immunizations.⁸

Background

To increase immunization coverage and prevent childhood illness, Indonesia has devolved responsibility for immunizations to local health centers, appointed practical nurses (called immunizers) in most health centers to carry out the immunizations, and developed a system of monthly visits (called *Posyandu*) to villages to reach the population. In Maluku Province, with a population of about 2 million, each health center serves roughly 10,000 to 20,000 people. Each immunizer, who typically has a ninth grade education, three years of nursing training in a hospital, several years of nursing experience, and a one-week government course on immunization tech-

niques, carries full responsibility for implementing the health center's immunization program, including managing the cold chain, giving vaccinations at the health center and *Posyandu*, recording and reporting data, and helping communities to organize the *Posyandu*. In Maluku, the immunizers from each district meet quarterly for several days. The *Posyandu* are community-supported monthly clinics that provide immunizations, growth monitoring, nutrition education, vitamin A supplements, antenatal care, family planning, and diarrheal disease control (ORS packets) for pregnant women and children under 5 years of age.

Project Concern and
the Provincial Health
Ministry Cooperate to
Improve Performance
of Health Workers
with an On-the-Job
Peer Training Program
for Immunizers
in Indonesia

Ideally, Posyandu are organized by the community and use community volunteers with technical assistance from the local health center staff.

One of the first actions taken by PCI and the provincial Ministry of Health under the program was to establish a computerized immunization information system that tracks the number of children vaccinated each month by the different health centers. This was followed by two provincewide immunization coverage household cluster surveys in 1993 and 1994 and an immunization management practices survey of 90 health centers in 1993. The surveys and information system brought to light several frequently occurring problems, including great disparity in the immunization performance among the different health centers in the province. This information stimulated the development of proposals for corrective action. Various ideas were considered to increase the coverage and quality of immunizations in the poorly performing health centers. One of them was additional training of the immunizers in these centers.

The immunizers had already received a formal one-week training course on the techniques of immunization when they were assigned responsibility for the immunization function. Therefore, giving another refresher course was rejected. The program chose instead peer-to-peer on-the-job training of the poorly performing immunizers in their own health centers. The idea was for experienced and successful immunizers from adjacent health centers to travel to the communities of less experienced and less successful immunizers and spend one to two weeks on-site helping them to learn the tricks of the trade. The program was designed and implemented in 15 health centers in 1993 and 1994 by PCI and the department of health in the province and its five districts. In 1996, PCI and BASICS undertook an evaluation of the training program using existing data from the information system, the management practices surveys, the trainer assessments, and administrative records. The evaluators also carried out in-depth interviews with program participants. The results of that evaluation are summarized here.⁹

Program Description

The program is called the immunizer-training-immunizer (ITI) program. First, each of the five district health offices in Maluku identified two or more health centers to receive the ITI program (referred to as "host health centers" and "host immunizers"), and also selected the immunizers who would give the training (referred to as "trainers"). The district health officers chose health centers for participation in the program on the basis of low coverages reported in the immunization information system and poor practices identified in the management practices surveys, or, in a few cases, because the immunizer was new and inexperienced and did not know how to record and report immunization data correctly. To reduce travel costs, trainers were selected from health centers adjacent to the host health centers and as similar to them as possible. All trainings were held at the host health centers for a period of one to two weeks. Usually the trainer and host immunizer were acquainted with each other before the ITI training through the quarterly district meetings, and

sometimes the visiting trainer stayed in the home of the host immunizer.

The trainer was reimbursed for travel and per diem costs by the program. The trainer also was given a checklist of key practices to address during the training.

Although neither the trainer nor the host immunizer received additional remuneration for this activity, the trainer received recognition, a paid trip to the host health center, and formal credit toward advancement.

During the training, the host immunizer received instruction and the opportunity to practice techniques to improve quality (e.g., operation and maintenance of the refrigerator, proper storage of the vaccines in the refrigerator, injection techniques), operation of the information system, and ways of increasing coverage. Some strategies for increasing coverage included reinforcing knowledge that it is appropriate to vaccinate when the child is ill with fever or diarrhea; using the record book during a Posyandu to identify no-shows who are due for a vaccination and tracking them down that day to give the vaccination; giving public presentations at Posyandu to

inform and motivate mothers about immunizations (e.g., by explaining that a slight fever in the child is normal after some vaccinations and should not be cause for failing to complete the full course of immunization); and increasing attendance at Posyandu by better scheduling, more effective use of village volunteers, and closer cooperation with community leaders and subdistrict officials.

Methods

Various kinds of data were used to assess the impact and cost of the ITI program. The immunization information system operated by the Maluku Ministry of Health provided the reported number of children vaccinated monthly by antigen and by health center. These administrative data are reported by the immunizers to their respective subdistrict health offices on a monthly basis.

Official provincewide estimates of the number of children eligible for immunization living in each health district catchment area were used to estimate the reported coverage in each area in the 12-month periods just before and just after the ITI

training. The analysis was restricted to age-appropriate reported coverage for three antigens—DPT1, polio3, and measles. In addition, independent information on the nature and quality of the immunization practices before and after the ITI training was obtained from the immunization management practices survey, from the assessments completed by the trainers at the conclusion of each ITI training, from the two immunization cluster surveys, and from interviews that the evaluation team held with district officials, trainers, and host immunizers in 1996. Finally, cost data were obtained from PCI accounting records.

Of the 116 health centers that were functioning in Maluku during 1993, 15 participated in the ITI 1993–94 pilot program and the other 101 did not. However, two of the program health centers and four of the other health centers did not report to the immunization information system during the study period. Thus the analysis was restricted to the 13 program and 97 control reporting health centers. Before and after data from the management practices surveys were available for 12 of the program health centers.

Findings

Reported immunization coverage increased about 40 percent in the program health centers in the year following the ITI training compared with the year before, while the coverage in the other health centers stayed about the same. For example, the analysis estimated that measles coverage increased from 35 percent before the training to 61 percent after the training in the 13 program health centers, while holding constant around 50 percent in the control health centers, for a net gain (program increase minus control increase) of 26 percentage points. The increase was consistent across health centers and antigens, yielding highly significant improvements for all three antigens and a composite score of the three antigens.

The estimates of target populations used as denominators in the coverage calculations are not reliable at the health center level. Therefore, the net gain in reported doses given was also calculated. The results were essentially the same as adjusted coverage: consistent and significant improvements across all antigens. For the composite, the number of reported doses given in the 13 program health centers increased by 38 percent compared to the control. Table 3-1 summarizes these results.

Various potential threats to the validity of the results reported in Table 3-1 were addressed and found not to be significant. Seasonal patterns due to weather or end-of-fiscal-year effects were controlled

"...it [the program] is practical, addresses the real problems we face, and we can admit what we don't know to a colleague more easily than in a formal classroom setting."

Comment by an ITI
host immunizer

Table 3-1. Impact of ITI Program: Actual and Potential

	Actual Effect All 13 Program Health Centers		Potential Effect 11 Program Health Centers	
Net Percentage Gain in Reported Doses: Composite of DPT1, Polio3, and Measles	38%		47%	
	Before	After	Before	After
Adjusted coverage:				
DPT1 (program)	49%	76%	49%	83%
Polio3 (program)	41%	68%	40%	76%
Measles (program)	35%	61%	34%	67%
Composite (program)	42%	68%	41%	75%
Composite (nonprogram)	58%	60%	58%	60%

Note: The actual effect is based on all 13 program health centers and potential effect on the 11 program health centers with functioning transportation systems in the year after the ITI training. The net gain is highly significant ($p < .001$) for all three antigens and the composite.

by including exactly the same months of the year in the before and after measurement periods. Data heaping at the boundaries of the time periods, due to delayed reporting or other reasons, was found not to be present. An observed increase in doses given by program health centers during the ITI training month was controlled by eliminating that month from the analysis, comparing the 11 months just preceding the training with the 11 months immediately following the training. Some of the program health centers reassigned, replaced, or changed the number of immunizers following the training, but analysis found that, although these factors may have influenced coverage in the health centers where they occurred, their positive effects in some health centers and negative effects in others tended to cancel each other out, resulting in no net effect on the study conclusions. Regression-toward-the-mean was a potential threat because the program group was selected from the lower part of the performance distribution, but this was ruled out as an important factor because the program group included only chronically poor performers.

The observed result reflects both an increase in actual coverage and an improvement in reporting. Although the data do not permit quantitative disentanglement of these two outcomes, there is strong anecdotal evidence that both factors contributed to the result and that the increase in actual coverage accounted for more than half the net gain in reported coverage.

The management practices surveys, trainer assessments, and in-depth interviews documented the reasons why the actual coverage and reporting performance improved. The management practices surveys obtained data on 12 key practices in 12 program health centers. As seen in Table 3-2, the average number of those practices performed correctly rose from 7.4 before the ITI training to 10.2 after the training, an increase of about 30 percent. The largest gains occurred in the practice of giving immunizations to children who are sick with fever, diarrhea, or respiratory infection. Assessments by the ITI trainers mirror the results of the immunization management practices survey.

All but two of the program health centers showed a large increase

Table 3-2. Correct Immunization Practices before and after ITI Training

Type of Practice	Number of Program Health Centers (out of 12) with Correct Practice		
	Before	After	Gain
1. Refrigerator temperature okay (2-8° C)	11	11	0
2. Refrigerator temperature recorded	6	11	5
3. No damaged vaccine	11	11	-1
4. All vaccine stored correctly	10	11	1
5. Shake test okay	11	12	1
6. Information recorded past three months	5	9	4
7. Information sent to subdistrict	3	5	2
8. Vaccinate when child >12 months	10	11	1
9. Vaccinate when child has fever	4	9	5
10. Vaccinate when child has diarrhea	4	10	6
11. Vaccinate when child has a cold	5	11	6
12. Open ampule and vaccinate, even for only one child	8	11	3
Average number of correct practices per health center	7.4	10.2	2.8

in coverage following the training. The two failures were due to transport problems—a broken boat in one and a burned up vehicle along with heavy flooding in the other. In both cases, the result was a drastic reduction in immunizer attendance at Posyandu and a decrease in coverage in the year following the ITI training. When these two health centers are removed from the analysis, the remaining program health centers show a net gain of about 47 percent in reported doses given. This figure represents what is possible under ideal circumstances and, in that sense, estimates the potential impact of the ITI program (Table 3-1). These estimates of impact do not include

increased vaccination for tetanus, hepatitis B, or other diseases that the program might achieve.

Cost and Cost-Effectiveness

The average out-of-pocket cost of each immunizer training was about \$53 (U.S.). The cost per training ranged from \$16 to \$134, depending on the duration of the training (anywhere from 3 to 12 days) and cost of travel. This figure includes all travel and per diem expenses of the trainers, but it does not include salaries of the trainers or host immunizers, which would have been paid anyway. Opportunity costs, such as reduced immunizations at the trainer's health center or costs

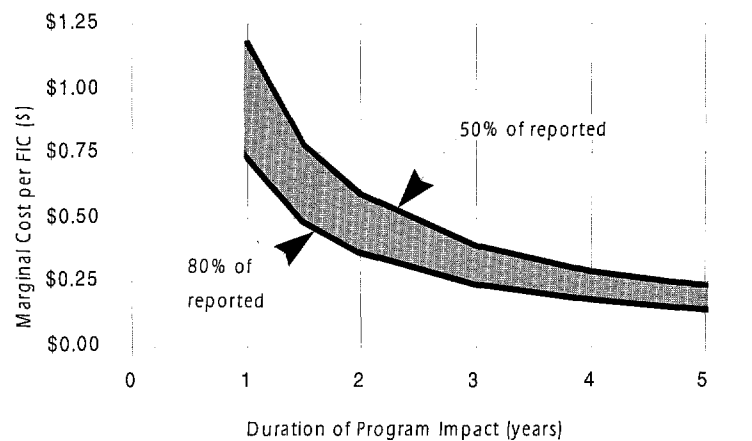
of additional vaccines due to the increase in coverage, are also included. The average of \$53 per training works out to about \$2.12 for each one percentile increase in reported coverage in the year after the training, and to about \$0.05 for each additional dose given.¹⁰

Another way to present costs is by fully immunized child (FIC).¹¹ FIC coverage was about 10 percentage points lower than measles coverage in the household immunization coverage surveys, yielding an ITI training cost of about \$0.59 per additional reported FIC, assuming the impact of the training lasts one

year. The estimated cost per additional FIC actually achieved (rather than reported) depends on how much is actual increase rather than improved reporting and on the number of years that the program impact is sustained. Figure 3-1 displays the range of marginal costs for an additional FIC when the duration of impact ranges from one to five years and the actual increase in coverage ranges from 50 percent to 80 percent of the reported increase. This yields a marginal cost range between \$0.15 and \$1.18 per FIC, with the most likely cost per additional FIC being around \$0.50 if the effect of

Figure 3-1.

Marginal Cost per Additional Immunized Child Gained from ITI Program



Note: Marginal cost per FIC = $0.59 / (R \times T)$, where R is the ratio of actual to reported improvement and T is the duration of the program in years.

the training is assumed to last for about two years.

Conclusion

The evidence presented above shows that the ITI program improved both the quality and coverage of child immunizations in poorly performing health centers in Maluku Province, Indonesia. There were not only improvements in technique, such as better adherence to cold chain protocols, refrigerator management, sterilization, data recording and reporting, and vaccination of sick children, but also improvements in general problem-solving, such as energetic same day follow-up of children who do not show up for scheduled immunizations at Posyandu and more persistent efforts to get communities to schedule Posyandu. The relative success of on-the-job peer training over classroom approaches at teaching problem-solving skills (as opposed to teaching routine technical procedures) has been observed by others,¹² and the results reported here support that observation.

The provincewide immunization information system proved to be a vital component of the ITI program.

Reported coverage by health center was used to identify the immunizers in need of training and the immunizers capable of conducting the ITI training, and the subsequent improvements (or lack thereof) were used to determine if the training had been successful. The importance of objective performance data to the success of peer-to-peer training has been observed by other authors as well.¹³

The program has been very popular with the participants and managers at the host health centers. Host immunizers talked enthusiastically about their experience. Several noted that it is much easier to learn in the ITI program than in official training courses because it is practical, addresses the real problems they face, and because they can admit what they do not know to a colleague forthrightly in a way they would never do in a formal classroom setting. This positive attitude about the program combined with the low out-of-pocket costs (\$53 per immunizer trained) and the program's positive impact on reported coverage motivated provincial and some district health departments to continue the program with their own funds.



World Relief Corporation

Haiti and other countries have spent years searching for effective, low-cost methods of combatting childhood malnutrition. Rehabilitation of malnourished children in hospitals did not work—it was too expensive and most of the rehabilitated children reverted to a malnourished condition after hospital discharge. Mothercraft Centers, developed as an alternative to hospital nutritional rehabilitation, proved to be more effective but were still too costly to expand into large-scale programs that could have an impact on malnutrition in large populations. Then nutrition demonstration foyers, which combined the demonstration elements of the Mothercraft Centers with an ongoing nutrition monitoring program, drastically reduced the cost of reaching malnourished children by moving the locus of activity into volunteer outdoor kitchens, or *foyers* in French, and shortening the period required for rehabilitation. Although evaluations in several countries found the foyers to be an effective way to reduce child malnutrition, the foyer approach remained fettered by its dependency on professional staff. Finally, the Hearth (English for *foyer*) model cut costs even further without sacrificing impact by incorporating volunteer mothers as the primary implementers of the program. This dramatic reduction in cost over the years (Figure 4-1) coupled with an increasing involvement of the community has enabled PVOs to implement and scale up Hearth programs for larger populations in Haiti, Vietnam, and Bangladesh.¹⁴ The application in Vietnam is the most advanced and has virtually eliminated severe malnutrition in an area of 80,000 people, and is now being steadily expanded into a national program.

Hôpital Albert Schweitzer (HAS) in Haiti,¹⁵ a private institution, is the de facto district hospital and public health system serving a population of about 200,000 rural Haitians. By 1993, when the Hearth program was started, the HAS service area was plagued by economic deterioration, family and community instability, and increasing rates of malnutrition and infectious disease, especially tuberculosis, following years of

Hearth Nutrition
Program at the
Hôpital Albert
Schweitzer in Haiti
Succeeds in
Creating a Cadre
of Volunteer
Community-Based
Health Workers

political and economic problems. Faced with pressure on its curative services and increasing need for preventive care in the countryside, HAS responded by forming and staffing a Public Health Unit, creating a network of about 60 paid community health agents living throughout the service area, and implementing various preventive care programs, including growth monitoring and promotion (GMP), micronutrient

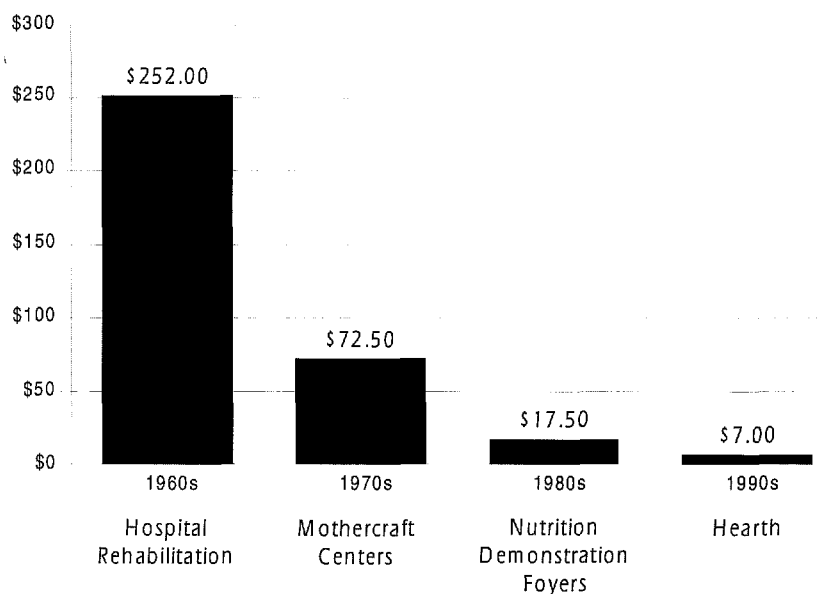
supplementation, and the Hearth nutrition program.

Program Description

At its simplest, the Hearth program organizes volunteer community mothers to feed malnourished children a single nutritious morning meal each day for nearly two weeks. First the children are dewormed. The volunteer mothers (*animatrices*), who are selected for their interest and leadership

Figure 4-1.

Cost per Participant of Nutrition Programs in Haiti



Notes: The costs for Hospital Rehabilitation and for the average of seven Mothercraft Centers are in 1969 U.S. dollars; from Beaudry-Darismé and Latham 1973.¹⁴ The source for the Nutrition Demonstration Foyers is W.G. Berggren, personal communication, 1996. B.R. Burkhalter and R.S. Northrup provide the costs for Hearth in "Hearth program at the Hôpital Albert Schweitzer in Haiti," in Wollinka et al. 1997.

qualities, prepare the 12 meals in their own home kitchens. Each animatrice feeds three to five malnourished children who are identified by weighing all the children in the 15 households she has selected to work with herself.

The involvement of volunteer mothers in the program and the location of the feeding at the hearths of these mothers, rather than in special, often distant feeding and training centers, are the critical differences from earlier approaches. A group of animatrices (typically from 10 to 20) from a single community are trained and motivated by nutrition educators (*monitrices*) in a week-long educational program held in their own community. Here they learn about basic nutrition and growth curves and then do a 24-hour recall dietary study on a single child from their 15 households who has been growing well (a "positive deviant"). Their trainers help to combine the one-family information from all the other animatrices in the group to define a nutritious meal that is clearly available locally and is affordable. In the HAS program, the menu derived from the positive-deviant data was always a mixture

of bean mash, grain, and vegetables. The animatrices-in-training prove to themselves and to the community the economic feasibility of the diet by purchasing food for such a meal at the local market. Then they practice the process of preparing that meal early the next morning in one of their own kitchens and feeding it to any available neighborhood children.

At the end of the training week, all the children aged 1 to 5 years from the selected households are dewormed and weighed. Those with malnutrition are identified and their mothers are convinced to have the children participate in the two-week feeding program beginning the following week. The program provides the animatrices with money to buy the food for the feeding, which costs about \$0.25 per meal.

The two weeks of feeding, although brief in duration, are sufficient to bring about a dramatic improvement in the appetite, general demeanor, and activity level of the participating children. That evaluators observed that "They are transformed from listless, apathetic children who

"They are transformed from listless, apathetic children who don't want to eat into energetic children who seemingly can't get enough to eat."

Noted by an evaluator

don't want to eat into energetic children who seemingly can't get enough to eat." This dramatic change is believed to convince the animatrices of the effectiveness of the diet and the importance of their role in working with the children and mothers as motivators and neighborhood leaders, even without pay. It is also believed to powerfully influence the mothers to continue giving their children the new diet after the Hearth feedings are completed, and to use the new feeding approach with younger siblings as well. With the exception of talks given at the first weighing, there is no special effort to educate the mothers of the malnourished children; they learn by watching, participating, and by talking with the animatrices and perhaps other mothers.

The program follows up with weighings at four and eight weeks after the feedings. Children with no weight gain are referred to the hospital for a medical diagnostic exam and treatment if necessary.

After the completion of the cycle, the animatrices are expected to continue to work with their 15 mothers. The monitrices use

monthly meetings of the animatrices from a particular locality to involve them in a broader range of public health activities such as breastfeeding promotion, AIDS and sexually transmitted disease (STD) prevention, and microenterprise loans for women. Their positive experience with the impact of the feeding program appears to be sufficient to convince the animatrices to continue to be involved with the program and to work with their 15 families on other health-related activities.

The program was implemented throughout the district over a period of about two years using a staff of 14 experienced and well-trained monitrices working out of the HAS Public Health Unit.

Working in pairs, the monitrices take three weeks to select and train the animatrices in a community and help them implement the two-week feeding experience.

The community health agents, mostly male, help to identify community candidates for the animatrice training, and provide a continuing HAS presence in the community. All told, about 1,900 animatrices were trained by 1996.

Methods

A retrospective impact evaluation¹⁶ used a longitudinal sample of 192 program participants and a comparison group of 185 children to determine the effect of the HAS program on the nutritional status of participants after one year of their participation in a cycle of Hearth sessions. The program and comparison samples were similar, with one exception. The children in the comparison sample participated in a GMP program but not in the Hearth program, while all the children in the program sample participated in the Hearth program and about one-third participated in the GMP program.

A multivariate analysis was used to compare the gain in nutritional status of the program group to the corresponding gain in the comparison group. Nutritional status was defined as the number of standard deviations above or below the median weight-for-age of the international standard. The analysis accounted for several potential confounding variables, including the age of the children, their initial nutritional status, and program learning effect. Age and program learning had no effect whatsoever

on gain in nutritional status, but initial nutritional status did, as discussed below.

Findings

The results indicate that, while the Hearth program made a significant contribution to the solution of the malnutrition problem, it did not by itself solve the problem. More specifically, the Hearth program nutritionally rehabilitated many moderately and severely underweight children within two weeks—a short-term result that motivated the mothers—prevented deterioration in the nutritional status of mild-to-moderately underweight children relative to the comparison group, but did worse than the comparison group with respect to *very severely* underweight children. The finding about the mild-to-moderately underweight children was highly significant ($p < .01$) and the gain over the comparison group was substantial (about 30% of a standard deviation on the reference weight-for-age distribution), while the negative finding about the very severely underweight was not statistically significant. This result suggests that a combination of Hearth and GMP may be the most

effective solution to the child malnutrition problem in this population.

The evaluation produced several other notable findings. The use of positive-deviant mothers was more important as a device to convince the community mothers that the menu was a good idea for its familiarity, effectiveness, and economic feasibility than as a strategy for discovering the best local foods. The animatrices were selected because of their personality and interest, with little consideration given to selecting animatrices who lived spread out over the community. Additionally, the animatrices themselves decided which families they would work with, although most of the families left out by this procedure eventually found their way into the program by just showing up or because the monitrices or community health agents asked an animatrice to accept them. This flexible approach tapped into the mobile dynamics of the Haitian countryside and probably made a key contribution to the success of the program. The age of the participants did not correlate with

nutritional status or gain in nutritional status over the course of the program, a surprising result in light of previously published findings.¹⁷

Conclusion

The Hearth program appears to be remarkably successful as a way to recruit and motivate community volunteers. The motivation generated in animatrices by the successful rehabilitation of malnourished children was notable and has established the cadre of animatrices as a valuable resource for reaching the community with other primary health care interventions. In fact, HAS has begun to implement breastfeeding promotion and HIV/AIDS prevention activities through the animatrices. In addition, the volunteer network is assisting HAS in a microenterprise and income generation program for women.

The cost of the program is relatively small, about \$7 (U.S.) per program participant. This includes about \$3 for food per child (\$0.25 per meal), and another \$4 per child for all costs

associated with salaries, transport, and documentation for monitrices and for other program staff.

The evaluation faced several methodological issues that threatened the validity of the results. Issues related to external historical events are likely to be present because of the economic, political, and epidemiological trends in the country, and regression-toward-the-mean is also likely to be present because the participants were selected from the lower part of the nutritional status distribution, but both factors are controlled for by the comparison group. Seasonality was controlled for by the one-year period between weighings. Program learning and age of participants were addressed in the multivariate analysis as noted above, but community effects and selection bias were not fully resolved. It is possible, even likely, that the Hearth program influenced the feeding practices and nutritional status of other children in the community who did not participate directly in the program, including siblings of participants. This community effect was not measured because the program

sample included only participants and was not a representative sample of all the children in the community. However, to the extent that this effect exists, it will increase the impact of the program. The potential selection biases¹⁸ are also unresolved and the direction of their effects is uncertain. Thus, potential confounding from external historical effects, regression-toward-the-mean, seasonality, participant age, and program learning are adequately dealt with, but the effects from selection bias are unresolved and uncertain, and community effects are unresolved but likely to increase the reported impact of the program.

To address these methodological issues, future evaluations should be done prospectively with samples that are representative of the population rather than of program participants. Future evaluations should study the contribution of individual program components, including deworming, feeding, hospital referral, and monitrice and animatrice characteristics, as well as the interactive impact of GMP and Hearth on nutritional status.

Applications Elsewhere

The Hearth model has been applied under very different circumstances in Vietnam and Bangladesh. The Vietnam program, a joint project of the Vietnamese government and Save the Children Foundation, U.S.A., has virtually eliminated severe malnutrition and established the core of a broader community health program according to a recent evaluation. Plans have been approved to expand the program to the national level. In Bangladesh, World Relief Corporation and the

Christian Service Society are implementing a version of the Hearth approach under a USAID child survival grant. Early results are encouraging. World Relief Corporation hosted a technical meeting in June 1996, attended by implementers and evaluators of the Hearth programs in Haiti, Vietnam, and Bangladesh. The papers presented at the meeting are available in the document edited by Wollinka et al. (1997).

Notes

Introduction

1. Storms, D., Carter, C., and Altman, P., eds. 1995. *Community Impact of PVO Child Survival Efforts: 1985-1994*. Proceedings of a worldwide conference sponsored by USAID, Bangalore, Karnataka, India. October 2-7, 1994. Baltimore, Md.: The Johns Hopkins University School of Medicine and Public Health. PVO Child Survival Support Program.

La Leche League

2. The study is reported in detail in Maza, I. Ch. de, Oliva, M.M. de, Huffman, S.L., Magalhaes, R.S., Stone-Jimenez, M., and Burkhalter, B.R. 1997. *Sustainability of a mother-to-mother support project in the peri-urban areas of Guatemala City: A La Leche League study*. BASICS Technical Report. Arlington, VA: BASICS Project, for LLLI and USAID.

3. Although 214 women received BC training during the project grant period, only 141 actually became BCs in the LLLG project; 68 were part of programs operated by the Salvation Army or the Church of Jesus Christ of Latter-day Saints and 5 did not participate in any program.

4. The positive impact of community-based mother-to-mother support groups on breastfeeding practice has been documented in Honduras and Mexico. The Honduras experience is documented in Lundgren, R., et al. 1996. "The promotion of breastfeeding and birth spacing in rural areas," as reported in Baker, J. *Promotion of exclusive breastfeeding: A review of experience from the field*. Nurture/Center to Prevent Childhood Malnutrition, June 1996; and the Mexico experience is documented in Morrow, A.L., Lourdes Guero, M., Calva, J.J., Morrow, R.C., Lakkis, H.D., Bravo, J., and Butterfoss, F.D. 1996. "The effectiveness of home-based counseling to promote exclusive breastfeeding among Mexican mothers." In: Wellstart International. *Exclusive breastfeeding promotion: A summary of findings from expanded program for breastfeeding's applied research program (1992-1996)*, 12-17. The impact of breastfeeding on morbidity, mortality, and fertility is widely documented; see, for example, a recent study based on data from Brazil, Honduras, and Mexico (Horton, S., et al. 1996. "Breastfeeding promotion and priority setting in health." *Health Policy and Planning* 11 (2): 156-168).

Project HOPE

5. Foreit, K.G., Hausteine, D., Winterhalter, M., and La Mata, E. 1991. "Costs and benefits of implementing child survival services at a private mining company in Peru." *Am J Public Health* 81 (8): 1055-1057.

6. The complete results of the study are reported in Franco, C., Quinley, J., Schwethelm, B., Kachule, T., and Burkhalter, B.R. 1997. *Employer-based programs in*

maternal and child health: Project HOPE's strategy for attaining long-term sustainability of health promotion in Malawi. BASICS Technical Report. Arlington, Va.: BASICS Project, for Project HOPE and USAID.

7. Skibiak, J.P. 1991. *Employer-provided family planning in the private sector: The lessons of Enterprise*. Arlington, Va.: The Enterprise Program, John Snow, Inc.

Project Concern

8. The PCI Maluku child survival program and its components are described in Robinson, J.S. 1995. "Innovations for increasing immunization coverage." In: Storms et al. 1994.

9. Details of the evaluation are presented in Robinson, J.S., Burkhalter, B.R., Rasmussen, B., and Sugiono, R. 1997. *Evaluation of the immunizer-training-immunizer program in Maluku, Indonesia: An on-the-job peer training approach to improving the performance of health workers*. BASICS Technical Report. Arlington, Va.: BASICS Project, for Project Concern and USAID.

10. This estimate of the cost per additional dose given assumes that the effects of the training last only one year.

11. A fully immunized child is defined as a child who has received all eight of the recommended vaccinations (BCG, DPT1/2/3, polio1/2/3, measles) by his or her first birthday. (Taken from Brenzel, L., and Claquin, P. 1994. "Immunization programs and their costs." *Soc Sci Med* 39 (4): 527-536.)

12. Godwin, P. 1983. "Training health workers: What needs to be taught and who should teach it." *Soc Sci Med* 17 (22): 1819-1825.

13. Thurston, L.P. 1982. *Utilizing urban women as peer trainers in behavioral community programs*. ERIC Report No. ED 289 934. Washington, D.C.: U.S. Department of Education, Office of Educational Research and Improvement.

World Relief Corporation

14. A review of the literature on the earlier programs as well as several in-depth papers on the applications of the Hearth model in Haiti, Bangladesh, and Vietnam can be found in Wollinka et al. 1997. Analyses of the Mothercraft Centers and nutrition demonstration foyers can be found in Beaudry-Darismé, M.E., and Latham, M.C. 1973. "Nutrition rehabilitation centers: An evaluation of their performance." *Environ Child Health* 19:299. Berggren, G.G., Alvarez, M., Genece, E., Amadee-Gedeon, P.M., and Henry, M. 1984. *The nutrition demonstration foyer: A model for combating malnutrition in Haiti*. MOVIPREP Monograph Series No. 2. International Food and Nutrition Program of MIT. Cambridge, Ma.: MIT Press. King, K.W.,

Fougere, W., Webb, R.E., Berggren, G.G., and Berggren, W.L. 1974. *Costs in relation to benefits for Mothercraft Centers in Haiti, 1964-1974*. Paper presented at Western Hemisphere Nutrition Congress IV, Bal Harbour, Fl., August 19-22.

15. World Relief Corporation organized the evaluation of the Hearth program at Hôpital Albert Schweitzer and also coordinated and hosted a technical meeting on applications of the Hearth model by World Relief in Bangladesh, by Save the Children in Vietnam, and by Hôpital Albert Schweitzer in Haiti. The summary of the evaluation presented here is based on more complete descriptions found in Berggren, W.L., and Burkhalter, B.R. "Introduction" (1-7) and in Burkhalter, B.R., and Northrup, R.S. "Hearth program at the Hôpital Albert Schweitzer in Haiti" (13-40), in Wollinka et al. 1997.

16. The 192 program children were a sample of the children who participated in the feeding sessions from October 1993, when the program started, through March 1994, with every seventh name on the participant list selected, and unfound children replaced by the next name on the list. These 192 children were visited and weighed in 1995, about 12 months after they completed the feeding sessions. The 185 comparison children were identified and weighed during field visits in the first half of 1995 to all communities in the district that had not yet received the Hearth program. The group included all children from these communities who were participating in the GMP program and whose weight cards showed that they were underweight sometime during the October 1993 through March 1994 period.

17. Schroeder, D.K., Martorell, R., Rivera, J.A., Ruel, M., and Habicht, J-P. 1995. "Age difference in the impact of nutritional supplementation on growth." *J Nutr (suppl)* 125:1051S-1059S.

18. There are at least five potential selection biases. GMP participation bias stems from the fact that the comparison group included only children who participated in GMP and had a weight card. Every seventh participant bias is associated with the systematic selection of every seventh name on the participant list rather than a random selection. Unfound participant bias addresses differences between selected children who were found and those who were not. Program refusers bias has to do with potential differences between mothers of malnourished children who refused to join the program even though asked and those who did participate. Mildly malnourished participants bias reflects the potential difference between mothers of mildly malnourished children who found their way into the program even though not invited and mothers of the mildly malnourished children in the comparison group.